

A REVIEW
OF THE ARGUMENTS
FOR AND AGAINST THE
CONTAGIOUS NATURE
OF
CHOLERA MORBUS.

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ON CHOLERA.

A Review of the arguments for and against the contagious nature of Cholera Morbus.

At a time like the present, when public attention is so much directed to the consideration of Cholera Morbus, and when the prospect of that dreadful scourge, reaching the shores of our native land, is far from imaginary, I consider it the duty of every medical officer, who thinks he can throw any new light on the subject, to communicate his sentiments to the public, for the general good.

Under this impression, I have thrown together the following observations, which have been gleaned from my experience in practice, and from reflection on what I have read on the subject.

The various publications which have been given to the world on this disease, by Indian practitioners, have, almost without exception, been works of singular merit; indeed those of Jamieson, Scott, Orton and Kennedy, would add lustre to the medical literature of any country; but while we feel grateful to these eminent men, for what they have done in the cause, let us candidly confess, that many of the phenomena of the disease are yet involved in doubt and darkness, and that something like a successful mode of combating its attacks, is still wanting.

The members of the society* are so fully acquainted with what has already been written on the subject, that it would be worse than useless in me, to occupy their limited time, by laying a detailed account of the disease before them. I shall, accordingly, content myself with skimming the surface, and entering more at length on those points which seem to require elucidation, or on which it may appear to me, that I have any thing new to offer.

The able and luminous reports of the Bengal and Madras Medical Boards, have left us no longer in doubt, that many of the ancient writers on medicine, were familiar with the disease—Aretæus, Cœlius Aurelianus, Paulus Œgineta, Celsus, and Avicenna, all distinctly mention it, and when we descend to more modern times, the descriptions of Sydenham, Bontius, Clarke, Curtis, Girdlestone, and Johnson, are equally satisfactory.

It was at first supposed, that the disease had never shown itself in an epidemic form previous to the awful visitation in 1817; the researches, however, of Messrs. Scott and Jamieson, have shown, that on various occasions prior to that period, it had ravaged large tracts of country, both in the Peninsula, and on the continent of India.

I have consulted Colonel Dow's translation of the history of Ferish-ta, with the view of ascertaining, if the disease had ever visited Hindoostan, in the earlier periods of its history; but the only notice of any

* This paper was originally intended, by the author, to be laid before the Medical and Physical Society of Calcutta.

pestilence which I have been able to find in that work, is the following: "This year was remarkable for a great drought and famine, in many parts of the world. The famine was succeeded by a calamitous pestilence, which swept away thousands from the face of the earth; for in less than one month, forty thousand died in Ispahan alone; nor did it rage with less violence in Hindoostan, where whole countries were depopulated *." Though I do not consider this passage to allude to Cholera, it is not devoid of interest at present, when we are in no little alarm for the introduction of plague from the ports of Arabia, and when there are not wanting some foolhardy enough to imagine, that the disease could not be propagated in this country.

It appears, that the charge, against the ancient medical writers, of supposing the disease to consist in an increased flow of bile, has been unjustly made. The scholastic attainments of Dr. Kennedy, in particular, have been successfully exerted to demonstrate, that the terms *χολη* and *bilis* were not confined to the biliary secretion; but were indiscriminately applied to it, and some other discharges. The writings of the earlier British practitioners in this country, may, at some future day, call forth a champion, in a similar cause, who may not be equally successful in their defence.

It may be questioned, by well intentioned persons, how far it would be justifiable to attempt to establish a belief in the contagious nature of Cholera. For my part, I cannot conceive that the attainment of truth, in any instance, could be prejudicial to the interests of society. After a fair inquiry, should there appear to be good reason for believing, that Cholera is contagious, the mass of suffering, which might hereafter be averted by appropriate measures of prevention, might surely be expected to more than counterbalance any disadvantages that could reasonably be expected to accrue from it. These would probably amount to little more than keeping a few idle and useless spectators at a distance, and thus prove the means of enabling the patient to breathe a purer atmosphere, than he otherwise could do.

Cholera Morbus, like almost every other epidemic disease, appears to be contagious. It is not my intention, however, to confine myself to mere assertion, or unsupported opinion; such a course of proceeding would be as little satisfactory to myself as to the public. I proceed, accordingly, to lay before them, the grounds on which I have arrived at that conclusion.

The writer of a letter, which appeared in the public prints, at home, under the signature of Sir Anthony Carlisle, has hazarded an assertion, that diseases which show no marks of being of an infectious nature, on the borders of the tropics, may become pre-eminently so, in the colder temperatures of higher latitudes, and has referred to the progress, and generally received opinion entertained of the Russian Cholera, as a striking illustration of the fact; and although I fully concur in the probability of the general principle, I trust I shall be able to ad-

* Vide vol. I. page 99.

duce proofs, sufficiently satisfactory to an unprejudiced mind, that the grand epidemic Cholera of 1817-18, was decidedly of that character.

Before entering on these proofs, however, it may be as well to offer a few preliminary observations, with the view of clearing the ground of controversy of any difficulties, which would unnecessarily distract the attention of the reader, at a time when the concentrated powers of the mind are required for a clear view of the different bearings of the evidence.

Were Cholera Morbus obviously contagious, it would be unnecessary for me to trespass on the attention of the public, on the present occasion; we can only then, it appears, in the course of our inquiry, rationally expect to discover the minor shades of that character.

The profession, and the public generally, appear to me, hitherto, to have been led astray in the investigation, by two important sources of error. They have too commonly arrayed the evidence for and against the contagious character of the disease, fairly against each other, as if they were of equal value, and have totally forgotten that, on one side, the proof is of a positive, and on the other, merely of a negative nature, and that one single positive proof, must instantly invalidate a whole chain of evidence, however apparently satisfactory, if merely negative. Thus, if a single person enter the chamber of a patient labouring under typhus, and actually catch the disorder, it is a strong proof of its infectious character; although thirty other persons may follow and escape with impunity.

Again, those who oppose the doctrine of contagion, have too often, with a blind perverseness, attributed, or argued as if they attributed to the supporters of the opposite theory, the belief that the disease is propagated by that influence alone; but this is, in reality, far from being the case; for the generality of those who believe in its contagious nature, at the same time, fully admit its propagation, by epidemic influence; and, in my opinion, by the admission alone, of this double power of extending its ravages, can the phenomena of Cholera Morbus be adequately accounted for.

What the precise nature of that influence may be, it would be premature to inquire, at this stage of our progress. It may be permitted me, however, to remark, with the view of enabling the reader to follow the train of reasoning employed, that the experience of all ages has concurred in attributing it to a peculiar state of the atmosphere, and in supposing, that the deviation from its usual state, is, in general, more widely diffused than the malaria or local poison, which engenders endemic disorders.

We have a little more difficult task to perform, in sifting the various and conflicting testimonies on the subject, and ascertaining their real value. At times when the public mind is in a state of agitation and alarm, there are not wanting impostors, who for the sake of a little brief notoriety, give publicity to statements which are entirely false; others again observe, and faithfully record, what they have seen; but, with precipitate haste, attribute effects to certain causes, which, however, may be far from being the true ones; and finally, occasionally certain

opinions take such entire possession of the mind, as to blind it, at once, to all useful inquiry; insomuch, that it will warp and distort facts themselves, to the support of some imaginary theory, or preconceived opinion.

In illustration of this, the reader would scarcely imagine, that the following passage was written by one of the most talented and accomplished men that ever served in this country. Dr. Jamieson, speaking of the non-contagious nature of the disease, remarks: "Now this uniformity of rise and declension, appears to be quite inexplicable, upon the supposition of contagion; for if the virus were capable of reproducing itself through the medium of the effluvia, or secretions of individuals already infected, it must have gone on augmenting until it had either no longer subjects upon whom to exercise itself, or were counteracted by some means more powerful than itself,—as uncongenial seasons or segregation, and the other prophylactic expedients resorted to on such occasions. Such at least is the course commonly pursued by those great scourges, the small pox and the plague. These, when unfortunately introduced into a city or tract of country, not only for a time remain attached to it, but manifestly depending on contagion, go on daily increasing and perpetuating themselves by fresh accessions of infectious matter, until they have either depopulated the place, or are checked by some of the counteracting circumstances just mentioned*." After this fearful announcement, let us draw breath, and inquire how we are here, and how the world has escaped depopulation?

Will the admirers of this doctrine have the hardihood to assert, that this was the course of the several influenzas, which have, at various times, raged as epidemics, some of which have swept from one end of the known world to the other, unchecked by any circumstances of season or climate. But admitting, for a moment, the perfect accuracy of Dr. Jamieson's statement, the argument it contains appears to tend more to prove the non-contagious character of small pox and plague, than of Cholera Morbus; for the two former, highly contagious as they confessedly are, he has shown are subject to certain natural restraints, whereas the latter has pursued an almost equal pace, unaffected by any changes of season or climate, with which we are acquainted.

It may be asked, how then is the decline of this dreadful scourge in different towns and villages to be accounted for? The answer is simple and evident, in two ways; first, the epidemic influence becomes weaker, and secondly the constitutions of the inhabitants become accustomed to its action; and so true is this, with respect to the plague, that after it has ceased for a month in a town, and those who had fled on its approach, have returned to their dwellings, it is not uncommon for them to be attacked by the disease; although the whole of those who had undergone the seasoning, retain their accustomed health.

But in case some of the supporters of Dr. Jamieson's doctrine should still fancy that the objection has not been satisfactorily combated, let Doctor Jamieson answer for himself, and this he does in a very satisfactory manner, in the following words:—"The reason rather seems to

“ have been, that in this quarter the epidemic, whether from the pure and elastic air of the northern provinces being less favorable to its existence than the thick, damp climate of Bengal; or *from its beginning to give way to that general law of nature, which requires that diseases, like all other things, should have their decrements as well as their rise and increase*; or from some other hidden agency altogether unsuspected, was now beginning to die away, and could only be kept alive by “strongly exciting causes*.”

We have seen enough then to satisfy us, that diseases of a highly infectious character have their periods of rise, maturity, and decline, and that without the assistance of the epidemic influence of the atmosphere the power of contagion becomes comparatively or entirely innocuous; that this is precisely the case in Cholera, I shall have occasion, perhaps more than once, to point out hereafter.

It is time that we should now proceed to examine particular portions, of the evidence for and against the contagious character of the disease, and although Dr. Jamieson has come to the conclusion, that it is not infectious, so satisfied am I with the evidence contained in his work to the contrary, that I shall trouble myself very little with any facts which may not be found in that record.

The only two ways, and this I wish the reader to bear in mind, in which it is attempted to account for the phenomena of the great epidemic Cholera are the following:—First, that it depended solely and entirely on a certain epidemic influence in the air; and this influence alone do the supporters of the non-contagious nature of the disease admit; and secondly, by the epidemic influence abovementioned, conjointly with contagion, a doctrine in which I confess myself inclined to believe.

Bearing this particularly in mind, let us proceed to compare acknowledged facts with either doctrine, and ascertain by which they can be most satisfactorily accounted for.

Dr. Jamieson commences his report with a detailed account of the rise and progress of the epidemic in Bengal, the whole of which, though highly important, my confined limits prevent me from quoting; he concludes it, however, in these words:—“ These facts are more than sufficient to “show the fallacy of every theory which attempts to derive the disease “from any local source, or to trace it to any one particular spot, as the “centre from which it was emitted to the surrounding countries. They “prove, without the possibility of dispute, that it broke out at very remote places at one and the same time, or at the distance of such short “intervals as to establish the impossibility of the pestilential virus being, “in this stage of its progress, propagated by contagion, or any of the “other known modes of successive production; and that its general diffusion was, therefore, referable to some cause of more universal operation †.”

“ It appears, from accounts received since this sketch was drawn up, “that the disease had ravaged Nusseerabad, a town in Mymensingh, in “June; and had even largely affected the south eastern division of that

* Bengal Report, page 27.

† Bengal Report, page 7.

"district, in the early part of the month, or *last days of May*; following the course of the Burumpooter, and irregularly attacking the villages on its banks *."

"A few dates may be remarked of the principal places attacked, in the early part of the progress of the epidemic, according to the order of their succession. May and June one thannah or police division of Kishnagur and Mymunsingh generally. July, eight divisions of the former district; Sonargong in the Dacca. August, in the first week, Calcutta, Dacca, and Dinapore; about the middle, Nattore; on the 17th, Sylhet; on the 19th Jessore, and towards the end of the month, Bhagulpore and Monghyr; Sept. 15th, Balasore, Burrisaul, Burdwan; 17th Buxar; 18th Chupprah and Ghazeepore, and in the latter part, Moozuffurpore. October, Bauleah; 15th, Berhampore and Rungpore. It is only necessary to cast one's eye over the map, to perceive how irreconcilable these dates and the intermediate distances are with the suspicion of a local origin †." Now, although I do not mean to deny that the disease may have arisen simultaneously at different places, I have cast my eye over the map, and admitting, which there is every reason to believe, that the disease did arise in the country situated between Mymunsingh and Nuddeah, and supposing its contagious influence to have spread equally around, like radii from a common centre, with a fair allowance for accidental circumstances, such as the more or less frequented state of certain routes, I can see no one instance, which is not perfectly explicable, on the supposition of its having spread by contagion.

Dr. Jamieson would almost appear to have wilfully shut his eyes to the *truth*, when he asserts, "That the disease arose nearly at one and the same time, at many different places, and that in the same month, nay, in the same week, it was raging in the unconnected and far distant districts of Behar and Dacca. It will not be argued, that the virus travelled or was conveyed over the many hundred miles intervening between the cities of Patna and Dacca within a few days, since all experience proves, that where it really did appear to be communicated from place to place, as along the course of the Jumna, its march was exceedingly slow, scarcely averaging a few miles a day ‡." Unfortunately for Dr. Jamieson, there is no occasion to make such a supposition; if the disease broke out in the country between Mymunsingh and Nuddeah, which he acknowledges it did in May, there is no improbability in supposing its contagious influence to have reached in opposite directions to the cities of Patna and Dacca, by the 11th of July.

At the risk of incurring the censure of prolixity, I shall give one more example, to show the difficulties into which the support of a bad cause has drawn a naturally acute mind. Dr. Jamieson is desirous of invalidating the testimony of certain medical officers who were of opinion, that the disease had been introduced into camp by an infected body of men, and proceeds thus:—"With regard to the appearance of the disease in the main body of the division, the testimony of different individuals is so much at variance as to be quite irreconcilable. Of

* Bengal Report. Note, page 6. † Note, page 7. ‡ Bengal Report, page 125.

“ twelve medical officers who have given replies to queries on this point, “ one states the disorder to have broken out on the 6th, two on the 7th, “ one on the 8th, two on the 9th, one on the 10th, four on the 11th, and one “ on the 12th. This discrepancy, however great, is easily explicable, when “ the insidious nature of the disease, at its first onset, is taken into ac- “ count, and when it is recollected, that the sphere of each individual’s “ observation would hardly extend beyond the battalion immediately “ under his charge. But how are we to reconcile the assertion of its hav- “ ing appeared on the 6th, 7th, 8th, or even the 9th, with the assumed “ hypothesis of infection from the Shergurh detachment * ? ” The reader is, no doubt, anxious to know how the difficulty was at last solved, and he shall read it in Dr. Jamieson’s own words ; although the explanation is a little at variance with the doctrine of non-contagion, for which he has all along been contending. “ We are assured by a gentleman, not of “ the medical profession, but perfectly capable of ascertaining the fact, “ that the disease was brought into camp at Terayt on the 6th, by the “ Rajah of Sumpter’s troops, who came for the purpose of being review- “ ed, and took post in the rear of the 25th Regiment Native Infantry, “ and it was reported to the Commander-in-Chief, that in the town of that “ name, ravages had been committed by it six weeks before the army “ crossed the Junna † . ”

Let us now proceed to inquire, in how far the objections urged by the supporters of the non-contagious nature of the disease appear to be of an insuperable character.

It is argued, that medical officers and hospital servants have not suffered more severely than any other class of the community. The objection, if well founded, would still be far from being conclusive, for it is a well known fact, that they are much less subject to the influence of infection than other people ; that plague is highly infectious few will be inclined to doubt, and yet Dr. Good informs us, “ that M. Assalini “ traces the progress of the plague among the French army in Egypt “ with great care, and asserts, that even those who associated with the “ sick were seldom infected, unless innated in their rooms, and instances “ the small degree of danger there is from casual intercourse, by showing “ how very rarely the medical attendants suffered ‡ . ” Notwithstanding this, the objection, weak as it is, had it been well founded, would have been one of the strongest, if not the very strongest proofs of the non-contagious nature of the disease yet advanced, by the supporters of that doctrine. But though I am not prepared to deny the truth of Dr. Jamieson’s assertion, in so far as regards what took place in Bengal, let us examine in how far it coincides with the opinions and facts brought forward by others.

Out of from twelve to fifteen native doctors, who have served under me, since I have been in the country, three have been seized with the disease, one of whom died of it. Dr. Craw, in his letter to Dr. Jukes, asserts, that of an hospital establishment of thirty persons attached to His Majesty’s 65th Regiment, not one escaped the disease. Dr. Jamie-

* Bengal Report, p. 141. † Page 142. ‡ Good’s Study of Medicine, vol. 2. p. 431.

son has recorded, that of five persons who carried to the funeral pile the body of a deceased comrade, who had died of the disease, every one was attacked with the disease, and died of it*. Dr. Kennedy has shown, that in the year 1825-26 an unusually large proportion of medical men died of the disease, on the Bombay establishment; and the account of the Madras Medical Board is so full and satisfactory on this head, that we can no longer doubt that, though Mr. Jamieson may have accurately stated what occurred on this establishment, the immunity of medical officers was accidental, and that they are far more liable to the disease than any other class of the community. But Mr. Scott shall speak for himself.—“Sometimes whole families have been swept off successively; servants have often been observed to sicken after attending their masters. The instances, however, above recited are by no means uniform; they are indeed opposed by directly opposite experiences; but it is contended, that a greater proportion of people, occupied as above described, have been attacked with Cholera, than has been observed to be the case in an equal number of people who were not employed amongst the sick. It should be remembered, also, that medical men, and hospital dressers, and servants, being inured to the contact of the sick, are less liable, on that account, to receive infection. The exact number of medical officers and servants, who have experienced attacks of Cholera, during the prevalence of that disease, in the hospitals at which they officiated, cannot be ascertained. It is known, however, that thirteen medical officers of this establishment have died of the disease, and that between fifteen and twenty suffered attacks of it, but recovered; in, perhaps, every instance the officers had been previously engaged with patients under Cholera. The circumstances of some of these attacks are very remarkable. The medical officer, in repeated instances, has been the only European in the corps or station who has suffered. Dr. Daun and Mr. assistant surgeon Gray, His Majesty's 89th Regiment, were both seized with the disease after intimate intercourse with the sick, and the two friends who attended the latter, during his severe illness, were also seized, while no European officer of the corps suffered†.”

Dr. Russell, who, while resident in this country, was, of course, an opponent of the doctrine of contagion, now fairly admits it; for he says, in his report on the Russian Cholera,—vide *Lancet*, Sept. 3. “It is curious, that the persons employed about these typhoid cases, when they are attacked, are never seized with ordinary fever, but with genuine cold, blue Cholera; nothing, therefore, is more certain, than that persons may come to the coast of England, apparently labouring under common feverish indisposition, who really and truly are suffering under Cholera, in the second stage.” Dr. Russell goes on to say, “The number of medical men and hospital attendants attacked with Cholera, during the present epidemic, in proportion to the whole employed, and to the other classes of society, has been, beyond all comparison, greater here than in India, under similar circumstances. Twenty-five medical men

* Kennedy on Cholera, p. 54. † Madras Report, p. 49.

"have been already seized, and nine have died out of two hundred and sixty-four; four others, have died at Cronstadt, out of a very small number residing in that fortress, at the time the disease broke out there; six attendants have been taken ill, at a small temporary hospital, behind the Aboucoff, since we wrote last. It is certain, however, that in some Cholera hospitals, favorably circumstanced, as to size, ventilation, and space, very few of the attendants have suffered.

"Relapses are rare in this epidemic, nor have they often been attended with fatal results. Hospital servants seem to have been most liable to them,—one physician had three attacks, the second, seven," &c. &c.

It is objected to the doctrine of contagion, that, in several instances, while the inhabitants of a town have been suffering severely from the disease, those employed in posts, with sometimes only the distance of the breadth of a street between them and the infected, and without any restriction on intercourse whatsoever, have entirely escaped, and in like manner, that one of the little islands at the mouth of the Megna escaped the disease, while the others suffered in the usual degree. Now, admitting the perfect accuracy of these facts, let us ask if infectious diseases are not occasionally confined to certain quarters of cities at home, and if the instances under review can be attributed, with one-half the probability, to a general corrupt state of the atmosphere, as to a casual escape from contagion?

It has, in like manner, been attempted, with a strange perverseness, to bring forward the fact of one corps in a camp being alone infected, although its intercourse with others has been unrestricted, as a proof of the non-contagious nature of the disease; but let us ask, if the communication between the men of one regiment is likely to be so intimate with those of another as with their own comrades, and likewise if the circumstance can be so satisfactorily accounted for, by referring the source of the evil to the atmosphere, as to contagion? The following may be selected as a specimen of the reasoning of the anticontagionists on this point:—"From the centre division, a few days previously to the breaking out of the epidemic, a small force, consisting of four troops of the 7th Regiment Native Cavalry, three light companies of sepoys, and the dromedary corps was detached on particular service in the neighbourhood. A short time afterwards, the remaining squadron of the corps of cavalry was sent, as a reinforcement, from the great camp, in which the disease had then got head. It carried the virus along with it, and actually lost several men after its junction with the forementioned detachment, which, nevertheless, remained perfectly healthy throughout.*" Although I am aware it will be deemed supererogatory, I take the liberty of offering a few brief remarks on this passage:—Had the disease which prevailed in the great camp, in this instance, depended on a vitiated state of the atmosphere, the squadron would, in all probability, have outmarched the infected portion, and regained their usual health; on the other hand, if we suppose that the infected portion of the atmosphere and the squadron of cavalry proceeded *pari passu*, and arrived simultaneously in the

* Jamieson, 182.

camp of the detached force ; according to the known laws of this, and all other epidemics, the squadron would now have remained comparatively exempt from its ravages, while the fresh, unseasoned troops in camp would have suffered in a very aggravated degree. But let us call to mind what actually happened, and ascertain in how far it agrees with these conclusions. The facts are these. A squadron marched from an infected camp, and carried the virus along with it ; it subsequently entered an uninfected camp, and actually lost several men afterwards, and yet, by a mere chance, it did not infect it. Could this have happened had the source of the evil resided in the atmosphere ?

It is likewise objected, that a regiment has been known to march through an infected country with impunity. Let us see if we find any thing similar to this in any other infectious disorder. “ From Sir Robert Wilson’s account of the diseases of Egypt, we learn that the English and Turkish armies, which marched from Aboukir to Cairo, escaped contagion, notwithstanding every village on the route was infected*.” The following extract, alas ! will show that the inhabitants of the country have not always been so fortunate, when infected corps have marched through them †. The following extract of a letter from the collector of Bellary deserves to be noticed :—“ It, (Cholera,) first made its appearance in the neighbourhood of Gooty, where the 2d Battalion 1st Regiment Native Infantry, which had suffered severely from this disease, halted for sometime. It subsequently appeared in nearly every village on the route of the 15th Regiment Native Infantry, which was severely attacked by the Cholera, as it passed through this district, and which halted at the station till the disease disappeared ; in some of the larger villages, such as Dhurmaveram, it has carried off nearly two thousand souls. Doubts may be entertained of the contagious nature of the disease ; but it appears to me quite certain that the infection has been communicated or created here by the two regiments before noticed. The disease was unknown here till they arrived ; it broke out where the first diseased corps halted for some days, and at nearly every village at which the other stopped. It has been unknown in any other part of the district ; and though it was unknown both in the 15th Regiment Native Infantry, and in the villages through which it passed, until they arrived in this district, it no sooner broke out among that body of men on the march, than it communicated itself to the fixed residents, who were before exempt from it ‡.”

Dr. Jameison seems inclined to believe, that a corps or city, after having undergone a seasoning, enjoys, comparatively, a temporary immunity from its attacks, and although the reverse of this appears to be the case with individuals, who have suffered from the disease, I am inclined to think that there is some truth in the supposition. Dr. Jameison expresses himself in the following terms :—“ The disease would sometimes take a complete circuit round a village, and leaving it untouched, pass on, as it were, wholly to depart from the district ; then,

* Thomas, 235. † Scott, 48. ‡ Madras Report, p. 48.

“ after a lapse of weeks, or even months, it would suddenly return, and scarcely re-appearing in the parts which had already undergone its ravages, would nearly depopulate the spot that had so lately congratulated itself on its escape. Sometimes, after running a long course on one side of the Ganges, though with free intercourse between both banks, it would, as if arrested by some unknown agent, stop at once, and taking a rapid sweep across the river, lay all waste on the opposite bank.”

It would have been interesting and satisfactory to know, if there were no public ferries at those spots, where it took these rapid sweeps across the river? Perhaps not; and these were merely the frisks and gambols of the atmosphere; taking the fact, however, as we find it, in conjunction with that of the disease occasionally making a circuit or *detour* round a village in its course, will any one, let us ask, have the hardihood to assert, that both facts can be, with greater probability, attributed to a generally depraved state of the atmosphere, than to the irregular and fortuitous channels by which contagion must necessarily be extended?

The disease, it appears, would ‘ after a lapse of weeks or even months, return, and scarcely appearing in the parts which had already undergone its ravages, would nearly depopulate the spot that had so lately congratulated itself on its escape.’

Do we, let us ask, find any thing similar in the history of any disorder confessedly infectious? The following appears to me not altogether inapplicable:—“ After the mortality had subsided at Mogadore, a corps of troops arrived at the city of Teradaunt, in the province of Suse, where the plague had been raging, and had subsided. These troops, after remaining three days at Mogadore, were attacked with the disease, and it raged exclusively among them for about a month, though they were not confined to any particular quarters; many of them having had apartments in the houses of the inhabitants of the town *.”

In the history of Cholera, instances are not uncommon in which the disease has broken out in public schools, jails, and other large establishments, and immediately disappeared on the buildings thus occupied having been vacated, and their inmates removed to some other, though at the most trifling distance. It will scarcely be imagined, that these facts have been brought forward by the supporters of the non-contagious nature of the disease, in proof of their belief; with how much justice I trust the reader is, by this time, able to judge for himself.

That contagion will not alone explain the phenomena of Cholera Morbus, I am ready to admit, for we occasionally find, as in the instance of Lucknow, related by Mr. Jamieson †, that a few cases of contagious or sporadic origin occur prematurely, which being unsupported by epidemic influence, are rapidly extinguished. That pending this influence in a concentrated form, the disease may arise spontaneously, is far from improbable; and we know, that after it has ceased to exist, the disease often disappears as rapidly as it invaded the place.

* Good, 431. † Bengal Report, p. 11.

The plague is subject to the same influence, for, at unfavorable seasons, its contagious powers are so feeble, as to be scarcely adequate to keep up the disease. In like manner, the virulence of the disease varies, being occasionally so formidable as to destroy within as short a time as Cholera; at other times, though retaining the glandular character, so mild as not to affect the general health, and finally it sometimes runs through its course, to a successful termination, as rapidly as Cholera: "The soldier who is struck in the ranks, with a sudden shock, or m'drop, as the Arabians call it, and is taken to the hospital on one day, has in a few instances, by proper treatment, passed through the febrile assault in three or four hours, and resumed his station the day after *."

Having now mentioned, and in my opinion, replied to every objection which has been urged against the contagious nature of the disease, how far, in a satisfactory manner, must be left to others to determine, I proceed to offer some observations, which would appear to lead to a belief in that doctrine.

I have already produced such powerful evidence, to prove that medical officers, and hospital attendants, are proportionally more than ordinary sufferers from the disease; that if the argument to be founded on that basis, may not be adduced in favor of contagion, it surely, with any show of justice, cannot be brought forward in evidence against it.

The testimony of all medical officers, who have written on the subject of the epidemic Cholera, coincides in the following leading points: That the disease infected cities and camps; that it broke out at public markets and at public ferries; and finally, that it spread along the great roads, or principal routes of communication.

As it is not difficult to imagine, that in camps, cities, and grain markets, the air may be less pure than in other places, we shall place no great reliance on that part of the argument, as it may be adduced with a show of reason, either for or against the contagious nature of the disease; but how, on the principle of the air being the source of the evil, can we account for the disease breaking out at public ferries, and that it did so, we cannot indulge a doubt—vide Jamieson, p. 6, &c.

The argument to be derived from the disease having been propagated along the great roads, is still more conclusive, and must, on due consideration, of itself, satisfy any unprejudiced mind of the contagious nature of the disease. What difference can we possibly imagine to exist, between the air over a high road, (those of central India are mere pathways,) and that over the adjoining fields? We may suppose, that the traveller is over-heated and fatigued, and, in some measure, predisposed to the disease; and this may be very true, in so far as regards himself, but will it account for the disease breaking out in the village in which he has halted for the night, or for a longer time? The idea is ridiculous; and this single fact, (and it is acknowledged by all,) appears to me so strong, that I cannot conceive, how any person can

* Good, 436.

resist the conviction, which it alone must carry to the mind, of the contagious nature of the disease.

The following extract of a letter, from Dr. Kennedy, of the Bombay establishment, is too full of interest, to be omitted in this place:—

“The epidemic Cholera has travelled as often against, as with the course of the winds. In the very face of a strong south-west wind, which blew in that direction for some months, it passed from Bengal to the Deekan. It has prevailed in every kind of weather common to the climates affected; in the driest weather, and during the deluge of periodical rains; in storms and in calms; under the scorching sun of Arabia, and amid the snows of Russia.” Opposed as these facts are to the usual progress of maladies, the extension of which depend solely on the atmosphere, the character of the succeeding facts favours the existence, in a still greater degree, of a contagious power:—

“Epidemic Cholera has, in general, rigidly followed the great highways of human intercourse, pursuing the line of navigable waters, and the route of caravans, it entered on, and traversed the different countries. Through India, it extended along the rivers Ganges, Hoogly, Junna, and Nerbudda; Arabia, Persia, and Syria, were penetrated by the Persian Gulf, the Tigris and the Euphrates; Moscow received the disease, by the route of the Volga; China, other parts of Eastern Asia, and the various islands, were infected over sea, as appears from the Cholera making its earliest ravages in the ports, towns, and maritime districts. Agreeing with the disposition of contagious diseases, the Cholera has been most virulent, wherever human beings were numerous, and concentrated in densely peopled cities; in armies encamped or upon the march; in localities unfavourable to free ventilation, as low sheltered grounds, narrow streets, close, dirty houses. The slow rate of progression, at which the epidemic advanced from place to place, in succession, and the temporary halts which it occasionally made, perfectly agree with a contagious origin, but they cannot be reconciled to an atmospheric. It travels on an average, at a rate, varying from ten to fifteen miles; but often, in particular instances, much less. Within the zillah of Vellore, it proceeded thirty-two miles in twelve days, and in the next twenty-seven days, eighty miles *.”

We have seen in the above extract, that the disease was introduced into some of the islands over sea. The following account of its introduction into those of the Mauritius and Bourbon, from the pen of Sir Gilbert Blane, cannot fail to be deeply interesting to the reader.

“The disease made its appearance in the Isle of France, on or about the 20th November, 1818. The *Topaze* frigate, from Ceylon, where the disease was prevailing, and which actually prevailed in the frigate, three men having died on the passage, arrived at the island on the 29th of the preceding month. *Can there be a doubt in the mind of any rational being*, that this disease, never before known here, in an epidemic form, was imported by that vessel. Is it conceivable, that the air of the continent of India, or of Ceylon, could be wafted hither, at the

* India Gazette, Dec. 16.

"distance of three thousand miles; or that, just at that point of time, the air of the island itself became contaminated? After prevailing for a few months, it vanished, for it is one of the peculiarities of this disease, that after rapidly selecting its victims, consisting of those who, by some obscure predisposition, are alone susceptible of it, it disappears.

"From the circumstances of its appearance in Bourbon, we are led to some still more important inferences. The Governor of that island, under the strong conviction of its infectious nature, took measures, by proclamation, to bar all intercourse with the Isle of France; but in spite of this, a boat from the shore of Bourbon, had clandestine communication with a small vessel from the Isle of France, probably about the 8th or 9th of January; for they left Louis on the 6th. After the usual interval, the disease showed itself, so as to leave no doubt of an infection traceable to the boat, and spread to one of the quarters of the town. The Governor, with that vigilance and energy which were in his character, instantly adopted such measures of police, by cordons of troops, and by conveying the sick to a lazaretto, that the progress of it was arrested, and it died away. In the Isle of France, on the contrary, where no such steps had been taken, the disease spread to the whole town, and to the rural population, to a calamitous degree*."

Did the disease depend entirely on the atmosphere for its origin, we might naturally expect, that it would prevail on board vessels, within Indian latitudes; but I am not aware of any instance in which the disease has broken out, and prevailed generally on board of a vessel direct from Europe, before she has had communication with the shore. That it may prevail on board vessels more destructively than on shore, after that intercourse has been established, the histories of the melancholy ravages committed by the disease on board the Hon'ble Company's ships Berwickshire and Abercrombie Robinson, alas! too amply demonstrate†.

Particular instances of the infectious nature of the disease, and of habits manifested by it, totally irreconcilable with the idea of the atmosphere being the sole source of mischief, are so numerous, that it would be useless to detail them; the following extract, however, from a letter on the subject, by a most intelligent medical officer, possesses a more than common interest:—"The epidemic made its approach directly against the wind, along the Gyah road. but instead of continuing its course into Palamow, it appears to have divided into two currents, one passing down the new road to the eastward, and the other to the westward. An incident mentioned to me by the acting magistrate, tells strongly in favor of contagion being at least occasionally an exciting cause. Every individual of a family having died of Cholera, the cattle and other effects were sent to a village for sale, in which no case had yet occurred; soon after their arrival, the disease broke out in the very house to which they were brought, and thence spread to the whole village."

The summary of the Madras report on this subject is satisfactory, as usual. "There are several instances recorded where Cholera has been

* Kennedy, p. 261. † Socs. Trans. vol. 5.

“ first manifested at a place, in the attack of an individual, who had come from some other place where the disease existed. The first case of an European, which occurred at St. Thomas’ Mount, was that of a man who had left Madras on the morning of the 15th of October. Proceeding on his journey towards Trichinopoly, in the evening he was taken ill about a mile from the Mount, brought back to the house where he had passed the day, and there died. On the 17th the wife of that person, on the 19th the owner of the house, and on the 21st his wife, all experienced attacks of Cholera, but recovered; several of the native servants also suffered.

“ The instances of the disease appearing at places immediately after the arrival of corps and detachments, which were suffering from it, are very numerous. For example, it appeared at Jaulnah, immediately after the junction of a party from Nagpore, amongst whom it prevailed. It appeared at Aurungabad and Mulligaum in Kandeish after the arrival of parties who had left Jaulnah, at the time the disease was prevalent there, and amongst whom it had broken out on the march to these places. It appeared a second time at Mulligaum, after the junction of the 1st Battalion 5th Regiment, in which Cholera prevailed. It appeared at Secundrabad after the arrival of a detachment suffering from it; and it appeared afterwards in the villages through which the detachment had moved.

“ It appeared at Gooty, where no case had been observed before, for six months, immediately after the arrival of the first Battalion 16th Regiment, in which it prevailed with great mortality. It is remarkable that the same formidable type of the disease which prevailed in the marching corps was communicated to the corps at Gooty. It also spread, on that occasion, to the adjacent villages.

“ It appeared in a detachment of artillery, previously perfectly healthy, upon their encamping on the ground which had been immediately before vacated by the 1st Battalion 8th Regiment Native Infantry, in which corps the disease prevailed; and the bodies of several persons, who had died of Cholera, remained exposed on the ground, when it was taken up by the artillery*.”

My own experience does not enable me to offer any thing important on this branch of the inquiry. I have already stated, that of from twelve to fifteen native doctors who have been employed under me, three, if not more, have been attacked with the disease.

While employed in Cachar, in 1825, I had an opportunity of witnessing a very destructive visitation of the epidemic Cholera. The disease advanced from Dacca to Sylhet, along the usual route of communication, whether by land or water, or by both, I cannot now determine, (and from thence into Cachar, along the line of the Berak river,) and continued its course, step by step, through the military cantonments on its banks, with a regularity which it would be difficult to account for, but on the principle of contagion.

* Saett. p. 47.

It likewise occurs to me, that I have, on more than one occasion, observed two or more men attacked in succession, who had taken up their berths in hospital, in places which had immediately before been occupied by Cholera patients ; but this, it is but fair to say, is little more than conjectural.

After having made so free with the opinions of Dr. Jameison, it is but justice to the memory of that accomplished man, to state, that he appears latterly to have entertained strong doubts, if the disease was not really of a contagious character ; but he shall speak for himself. " If setting aside the circumstances militating against it, we take it for granted, that the infection was truly received by the centre and Hansi divisions, from the detachments above mentioned, we must believe that the disorder, though not communicable by contact from person to person, was so from one large body to another large body, (query—how can infection be communicated from one large body to another large body, but by means of one or more individuals ?) and that wherever the poison got head amongst a number of men, it assumed some new quality, so as when mixed with the atmosphere to become contagious ; what constituted this additional quality, we cannot pretend to determine ; but in support of its existence we may quote the predilection of the epidemic for cities and camps ; the infection of the left division, and the Nagpore and Meerut troops, immediately after entering into the diseased medium at Jubbulpore, Nagpore, and Delhi, and the similar case of the troops and followers in attendance on the Governor General, being attacked shortly after communicating with an infected village, in the Gorruckpore district. To the same account, may be placed the progressive march of the disorder from one part of an infected place to another, as in the centre and Hansi divisions ; and more particularly the Rajpootana force, in which the virus seemed to be regularly propagated from corps to corps. In some instances the suffering body would appear to have sickened immediately on coming into the poisonous medium, as was the case with the Nagpore troops, who were infected on the very day in which they encamped at the infected village of Guongong. But more frequently one or two days would seem to have been requisite to bring the virus into action. Thus the Meerut detachment entered Delhi on the 29th, and was not affected till the 31st ; thus, too, the Hansi troops had not the disease till the 6th, the day after the junction of that detachment *."

It would be superfluous in me longer to protract the discussion of this subject ; the reader has now had both sides of the argument fairly stated to him, to the best of my ability, and can judge for himself ; for my own part, with every deference to the opinions of my professional brethren, I declare, in the words of Dr. Kennedy, that I know no character belonging to any contagious disease, which the epidemic Cholera did not manifest ; and that if it was not contagious, I know no other disease which I would be inclined to consider so ; and I cannot help regretting that it should have been left to a person who never saw the disease, to find out its real nature, even although that person is Sir Gilbert Blane.

* Jameison, p. 144.

Taking it for granted that the disease is contagious, it only remains for us to inquire to what practical measures of precaution that admission would direct us. The usual measures of quarantine, cordons, sanitaire, &c. immediately suggest themselves to the mind, for the purpose of preventing the introduction of the disease from abroad, or of confining it within the narrowest limits possible, when it has actually broken out.

In the latter case, the separation of the sick, the immediate evacuation of infected buildings, aspersions with solutions of the chlorides, and the fumigation of chambers, apparel, and articles of furniture capable of harbouring the virus, with the nitric or muriatic acid gases or chlorine, ought to be rigidly enforced, and sedulously employed.

The ingenious Mr. Hamilton Bell has remarked, that it is probable an opportune course of quinine would assist the system in warding off the attacks of Cholera asphyxia, and I quite concur with him in opinion. The experiment is easy of execution, and is little likely to be attended either with inconvenient or injurious effects.

In the fens and marshes of Italy, a mask of gauze is worn by the inhabitants, with great supposed advantage, as a preventive against the influence of malaria; and there seems no reason to conclude, that the same measure might not be beneficial generally, during the prevalence of the disease, and to those in particular, whose duties it may be to administer to the wants of those actually infected.

Frictions with oil over the whole body are considered almost a certain prophylactic against the infection of the plague. "It was considered," remarks Dr. Good, "the most sovereign thing on earth, in the last pestilent ravage at Malta *." Are not the same means worthy of a trial, as a measure of prevention in this disease?

Mr. Baldwin informs us, that among upwards of a million of inhabitants carried off by the plague, in Upper and Lower Egypt, during the space of four years, he could not learn that a single oilman or dealer in oil had suffered †.

It would be a subject of the greatest interest, nay, importance, to inquire, although I suspect there is little probability of obtaining satisfactory information on the point, if those persons who pursue the profession of oil-merchants in this country, or who habitually use frictions with oil, have hitherto been more exempt from its ravages, than other classes similarly situated.

If the disease be really infectious, and I cannot help thinking that it is, and these measures of prevention which have been found so beneficial against the influence of malaria and infection in other pestilences, should prove equally powerful against that of Cholera, the number of lives which might be saved, and the degree of human suffering which might be averted, would be almost incalculable, and, therefore, the question demands the serious attention of the government, and of every one interested in the welfare of his species.

* Good, 2. 139. † Thomas, 241.

